ulus other than hypoglycemia might have been preserved (2). I speculated, admitting that this was not proved, that the accused had indeed been neuroglycopenic from symptoms of severe hypoglycemia but that on being arrested, a surge of epinephrine rapidly improved his mental status.

The case was dismissed.

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Meal-Related Insulin Supply in IDDM

Recently, Halfon et al. (1) reported that prandial insulin requirements of patients with insulin-dependent diabetes mellitus (IDDM) are linearly related to the amount of ingested carbohydrate (CHO). In their study, prandial insulin requirements ranged between 12 U for 60 g CHO and 31 U for a 140-g CHO meal. Although these figures were obtained by intravenous insulin delivery via Biostator, the authors propose that their findings should "help in programming open-loop systems . . . by the subcutaneous route."

However, there are some well-known differences concerning the pharmacokinetics of regular insulin between its intravenous and its subcutaneous administration that preclude unmodified application of Halfon et al's. data to practical subcutaneous insulin therapy. *1*) Used intravenously, regular insulin has 0 absorption time, whereas subcutaneously administered regular insulin has an absorption half-time of ~2–4 h (2). The elimination half-time of serum-insulin is only ~3–5 min (3). 2) Absorption time, and hence the duration of insulin action after subcutaneous injection, is dose-dependent (2); i.e., 4–6 h after injection of 0.1 U insulin/kg body wt s.c., serum insulin levels return to baseline, compared to >8 h after injection of 0.3 U insulin/kg body wt s.c. (4). *3*) Intestinal transit of food via the small intestine (particularly the upper jejunum where glucose absorption takes place) is completed within 4–5 h and is relatively independent of composition and size of a meal (5–7). This is confirmed by the data of Halfon et al. (1). In their study, blood glucose levels have returned to baseline already 3–4 h after ingestion of 60 g CHO, whereas more than twice that amount of CHO (140 g) prolonged the elevation of glycemia and of insulin infusion rates for only 1 h longer.

What does all this mean for practical insulin therapy? A 140-g CHO meal would require 31 U of regular insulin for normoglycemic metabolism according to Halfon et al. If administered subcutaneously to a normal-weight adult, this insulin dose would act for >8 h, which is considerably longer than the intestine would require to absorb glucose from the ingested food; late postmeal hypoglycemia would be the consequence. It therefore seems prudent to limit the amount of CHO per meal to ~80 g (and the amount of insulin to balance this load to ~10–15 U) to ensure synchronization of the hypoglycemic effect of insulin and the hyperglycemic effect of the food during the entire absorptive process. This has been recommended to patients on intensive insulin therapy and liberalized diet in our department with satisfactory results (8).

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